

# PATENT ABSTRACTS OF JAPAN

(11)Publication number : 2000-050375

(43)Date of publication of application : 18.02.2000

(51)Int.Cl.

H04R 1/00

(21)Application number : 10-228526

(71)Applicant : OSAWA KAZUO

(22)Date of filing : 30.07.1998

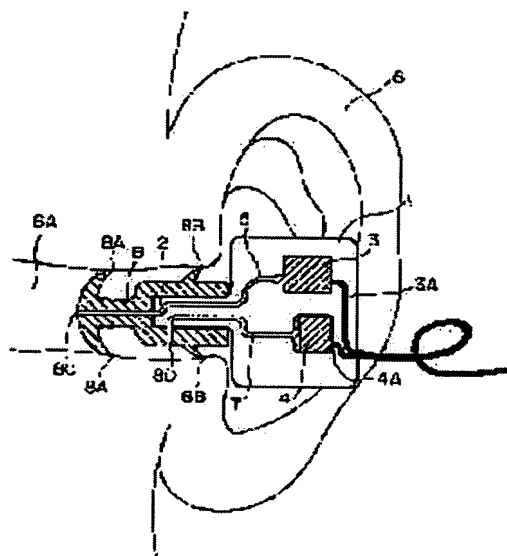
(72)Inventor : OSAWA KAZUO

## (54) EAR MICROPHONE

### (57)Abstract:

**PROBLEM TO BE SOLVED:** To provide an ear microphone that prevents howling with a small size, a simple structure at a low cost and prevents fidelity in a high frequency sound component from being deteriorated.

**SOLUTION:** The ear microphone is provided with a speaker unit 3 and a microphone unit 4 that are placed separately, a sound shield member 8 with an outer diameter in pressure contact with an external auditory meatus 6A of the user, a 1st sound guide 5 that is fitted to the speaker unit 3 and leads a sound produced by the speaker unit to the external auditory meatus 6A, a 2nd sound guide 7 that is fitted to the microphone unit 3 and leads a sound generated by the user to the microphone unit, a 1st sound hole 8c that is formed to the sound shield member 8 so as to communicate with the 1st sound guide 5, and a 2nd sound hole 8D that is formed to the sound shield member 8 so as to communicate with the 2nd sound guide 7.



## LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than  
the examiner's decision of rejection or  
application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's  
decision of rejection]

[Date of requesting appeal against examiner's  
decision of rejection]

[Date of extinction of right]

\* NOTICES \*

JPO and NCIP are not responsible for any  
damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the  
original precisely.

2. \*\*\*\* shows the word which can not be translated.

3. In the drawings, any words are not translated.

---

## CLAIMS

---

[Claim(s)]

[Claim 1] The loudspeaker unit and microphone-phon unit which have been separated and  
arranged, the 1st sound which leads the noise insulation member which consists of an outer  
diameter which contacts a user's external auditory meatus, and the voice which it was  
attached in said loudspeaker unit and generated in this loudspeaker unit to said external  
auditory meatus -- with a conduit the 2nd sound which leads the voice which it was attached in  
said microphone unit and the user generated to this microphone unit -- with a conduit said 1st  
sound -- the 1st sound pilot hole currently formed in said noise insulation member so that it  
may be open for free passage with a conduit, and said 2nd sound -- it is characterized by  
having the 2nd sound pilot hole currently formed in said noise insulation member so that it may  
be open for free passage with a conduit -- disagreeable - microphone.

---

[Translation done.]

\* NOTICES \*

JP0 and NCIP1 are not responsible for any damages caused by the use of this translation.

- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.\*\*\* shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

---

DETAILED DESCRIPTION

---

[Detailed Description of the Invention]

[0001]

[Industrial Application] this invention is disagreeable - microphone was started, while changing voice into the electrical signal in the mobile transmitter of fields using especially wireless or a cable, such as a mutual coincidence message transmitter and a simplex communication machine, etc., the electrical signal was changed into voice and the mutual coincidence message was enabled -- disagreeable -- it is \*\* about - microphone.

[0002]

[Description of the Prior Art] generally it is used -- disagreeable - microphone was constituted so that the voice from a loudspeaker unit might be collected by the microphone unit. moreover, the others currently generally used are disagreeable -- having adopted the approach of changing a bone conduction sound signal (vibration) into an electrical signal, as a - microphone also occurs. the others generally used further again are disagreeable -- there are some which are constituted as a - microphone using the acceleration sensing element.

[0003]

[Problem(s) to be Solved by the Invention] however, the voice from the aforementioned loudspeaker unit is constituted so that a sound may be collected by the microphone unit -- disagreeable -- since the howling occurred, depressions, such as a mobile transmitter, were carried out and - microphone made use impossible. moreover, the method of changing the aforementioned bone conduction sound signal (vibration) into an electrical signal is disagreeable -- since structure became complicated, - microphone had the fault which becomes expensive. the others generally used further again are disagreeable -- the structure which used the acceleration sensing element is used for - microphone -- disagreeable - microphone had the fault which becomes expensive while the fidelity of the voice of loud sound fell.

[0004] it is originated in order that this invention may solve the aforementioned trouble,

generating of a howling is prevented, and by miniaturizing, while structure is easy and it is moreover cheap, it can prevent that the fidelity of the voice of loud sound falls -- disagreeable -  
- it aims at offering - microphone.

[0005]

[Means for Solving the Problem] this invention is disagreeable - microphone with the loudspeaker unit and microphone-phon unit which have been separated and arranged the 1st sound which leads the noise insulation member which consists of an outer diameter which contacts a user's external auditory meatus, and the voice which it was attached in said loudspeaker unit and generated in this loudspeaker unit to said external auditory meatus -- with a conduit the 2nd sound which leads the voice which it was attached in said microphone unit and the user generated to this microphone unit to said external auditory meatus -- with a conduit said 1st sound -- the 1st sound pilot hole currently formed in said noise insulation member so that it may be open for free passage with a conduit, and said 2nd sound -- it is characterized by having 2nd . pilot hole currently formed in said noise insulation member so that it may be open for free passage with a conduit.

[0006]

[Function] this invention is disagreeable -- the sound to which the voice generated in the loudspeaker unit is attached in the loudspeaker unit in - microphone -- it is led only to the external ear of a user's lug by the 1st sound pilot hole currently formed in the conduit and the noise insulation member, and since it insulates by the noise insulation section currently formed in the noise insulation member, it is not led to a microphone unit. Moreover, since the noise insulation section currently formed in the external ear of a user's lug at the noise insulation member is close to the loudspeaker unit, an external noise does not mix. For this reason, only the voice which the user generated is collected by the loudspeaker unit.

[0007]

[Example] based on the following and an accompanying drawing, this invention is disagreeable - microphone is explained to a detail.

[0008] this invention of drawing 1 is disagreeable -- it is the outline configuration explanatory view of - microphone.

[0009] In drawing 1 , by the shape of a cylinder object, the attachment section 2 made of resin is formed in the shell body 1 made of resin (casing) in one, and the outer diameter of this attachment section 2 is formed in it according to the shape of a cylinder object more thinly than the outer diameter of said shell body (casing) 1. A loudspeaker unit 3 and the microphone unit 4 dissociate physically, and are arranged, and cord 3A and cord 4A which are connected to the jack (illustration abbreviation) are connected to said shell body (casing) 1 at these loudspeaker units 3 and the microphone unit 4, respectively. the sound which is moreover said loudspeaker unit 3 in midair by the product made from a rigid plastic etc. according to the shape of a wire --

the conduit 5 is attached. this sound -- the conduit 5 is constituted so that the voice generated in the loudspeaker unit 3 may be led to external-auditory-meatus 6A of a user's lug 6. moreover, the sound which is moreover said microphone unit 4 in midair by the product made from a rigid plastic by the shape of a wire -- the conduit 7 is attached. The noise insulation member 8 which is inserted in external-auditory-meatus 6A of a user's lug 6, and has flexibility by the product made from elasticity is attached in said attachment section 2 free [ attachment ]. 1st noise insulation section 8A and 2nd noise insulation section 8B which become this noise insulation member 8 from the outer diameter which contacts external-auditory-meatus 6A of a user's lug are formed. Such 1st noise insulation section 8A and 2nd noise insulation section 8B consist of members made from elasticity which have flexibility. the sound attached in said noise insulation member 8 at the loudspeaker unit 2 -- sound pilot hole 8C which is open for free passage to the conduit 5 is formed. these sounds -- a conduit 5 and a sound -- a conduit -- 8C is constituted so that the voice generated in the loudspeaker unit 2 may be led only to external-auditory-meatus 6A of a user's lug 6. That is, since noise insulation section 8A of the noise insulation member 8 is close to external-auditory-meatus 6A of the lug 6 a user's external ear, the voice generated in the loudspeaker unit 2 is not drawn other than external-auditory-meatus 6A of a user's lug 6. the sound attached in said noise insulation member 8 at the microphone unit 3 -- sound pilot hole 8D which is open for free passage to the conduit 7 is formed. these sounds -- a conduit 7 and sound pilot hole 8D are constituted so that the voice which the user generated may be collected only to the microphone unit 4.

[0010] it is involved in this invention of the above-mentioned configuration -- disagreeable -- in the example of - microphone, a loudspeaker unit 3 and the microphone unit 4 dissociate physically, and are arranged at the shell body (casing) 1. the sound which is moreover said loudspeaker unit 3 in midair by the product made from a rigid plastic by the shape of a wire -- the conduit 5 is attached. if 1st noise insulation section 8A which becomes the noise insulation member 8 attached in the attachment section 2 of said shell body (casing) 1 free [ attachment ] from the outer diameter which contacts external-auditory-meatus 6A of the lug 6 a user's external ear is formed -- alike -- said sound -- sound pilot hole 8C which is open for free passage to the conduit 5 is formed. for this reason, these sounds -- a conduit 5 and a sound -- a conduit -- the voice which generated 8C in the loudspeaker unit 2 -- a sound -- a conduit 5 and a sound -- a conduit -- it is led only to external-auditory-meatus 6A of a user's lug 6 by 8C. In this condition, since 1st noise insulation section 8A which becomes the noise insulation member 8 from the outer diameter close to external-auditory-meatus 6A of the lug 6 a user's external ear is formed and the noise from . outside does not go into external-auditory-meatus 6A of a user's lug 6, only the voice generated in the loudspeaker unit 2 is led to external-auditory-meatus 6A of a user's lug 6. Thus, since it insulates by 1st noise insulation section 8A of the noise insulation member 8 and a sound is not collected by the microphone unit 3, a

howling does not generate the voice generated in the loudspeaker unit 2. Moreover, since it consists of members made from elasticity which have flexibility, also when inserting the noise insulation member 8 in external-auditory-meatus 6A of a user's lug 6 or removing the noise insulation member 8 from external-auditory-meatus 6A of a user's lug 6, a blemish does not attach such 1st noise insulation section 8A and 2nd noise insulation section 8B to external-auditory-meatus 6A of a user's lug 6. moreover, the sound attached in the microphone unit 3 while noise insulation section 8B close to external-auditory-meatus 6A of the lug 6 a user's external ear is formed in said noise insulation member 8 -- sound pilot hole 8D which is open for free passage to the conduit 7 is formed. For this reason, only the voice which the user generated is collected by the microphone unit 3. That is, since noise insulation section 7B of the noise insulation member 7 is close to external-auditory-meatus 6A of a user's lug 6 and an external noise insulates by noise insulation section 7B of the noise insulation member 7, only the voice which the user without a noise generated is collected by the microphone unit 3. Furthermore, since it is attached free [ attachment ], if two or more things of the magnitude of the dimension suitable for external-auditory-meatus 6A of a user's lug 6 are prepared, it can be comfortably used for the noise insulation member 8 which is inserted in external-auditory-meatus 6A of a user's lug 6, and has flexibility by the product made from elasticity, without giving a blemish to external-auditory-meatus 6A of a user's lug 6.

[0011] The semantics which this invention is not limited to the above-mentioned example, and has various modifications and applications, and dissociates physically and arranges a loudspeaker unit 2 and the microphone unit 4 on the shell body (casing) 1 in the aforementioned example is that the voice generated in the loudspeaker unit 2 constitutes so that a sound may not be collected by the microphone unit 3. Therefore, you may arrange so that a loudspeaker unit 2 and the microphone unit 3 may contact. Moreover, the shell body (casing) quality of the material which this invention uses may not necessarily be the product made of resin of the aforementioned example, but should just be a thing of the quality of the material which has a fixed gestalt. Furthermore, the noise insulation member 8 which is inserted in external-auditory-meatus 6A of a user's lug 6, and has flexibility by the product made from elasticity can be comfortably used, without giving a blemish to external-auditory-meatus 6A of a user's lug 6, if two or more things of the magnitude of the dimension suitable for external-auditory-meatus 6A of a user's lug 6 are prepared, since it is attached free [ attachment ]. The configuration of the noise insulation member 8 is not limited to a configuration as shown in drawing 1 , and the space where the voice which the user generated is collected by the microphone unit 3 should just be formed further again.

[0012]

[Effect of the Invention] this invention is started as explained above -- disagreeable -- since a howling does not occur from not being collected by the microphone unit since the voice

generated in the loudspeaker unit insulates by the 1st noise insulation section of a noise insulation member, - microphone can perform both coincidence transmission-and-reception talk communication link with the outstanding speech quality without a noise. moreover -- since vibration of the lug at the time of a user's generating is changed without using an acceleration sensing element -- quantity -- a faithful speech quality can be obtained. Furthermore, since the noise generated in a noise or a construction site of an electric car etc. insulates by the 2nd noise insulation section of a noise insulation member, an external noise can talk over the telephone, without being interfered by the noise without a sound's being collected by the microphone unit. this invention is started further again -- disagreeable, when - microphone is chiefly used as a supply as an option Since it becomes unnecessary to build a loudspeaker unit and a microphone unit in a body Reduction of cost can be aimed at while being able to attain a large miniaturization, since it is generally marketed and the size (21 millimeters in for example, height [ of 130 millimeters ] x width-of-face [ of 43 millimeters ] x thickness) of the body of a portable telephone etc. can be decreased sharply. this invention is started further again -- disagreeable -- since it becomes unnecessary to have a body when - microphone is used for a portable telephone etc., it is possible to do other activities (for example, operation with both hands, preparation of a meal, etc.), carrying out both coincidence message.

---

[Translation done.]

\* NOTICES \*

JPO and NCIP are not responsible for any damages caused by the use of this translation.

- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.\*\*\*\* shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

---

DESCRIPTION OF DRAWINGS

---

[Brief Description of the Drawings]

[Drawing 1] The explanatory view showing the outline configuration of the example of this invention

[Description of Notations]

- 1 ... Shell body (casing)
- 2 ... Attachment section

3 ... Loudspeaker unit  
3A .. Cord  
4 ... Microphone unit  
4A .. Cord  
5 ... a sound -- a conduit  
6 ... Lug  
6A .. External auditory meatus  
7 ... a sound -- a conduit  
8 ... Noise insulation member  
8A .. The 1st noise insulation section  
8B .. The 2nd noise insulation section  
8C .. Sound pilot hole  
8D .. Sound pilot hole

---

[Translation done.]

\* NOTICES \*

JPO and NCIP are not responsible for any  
damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

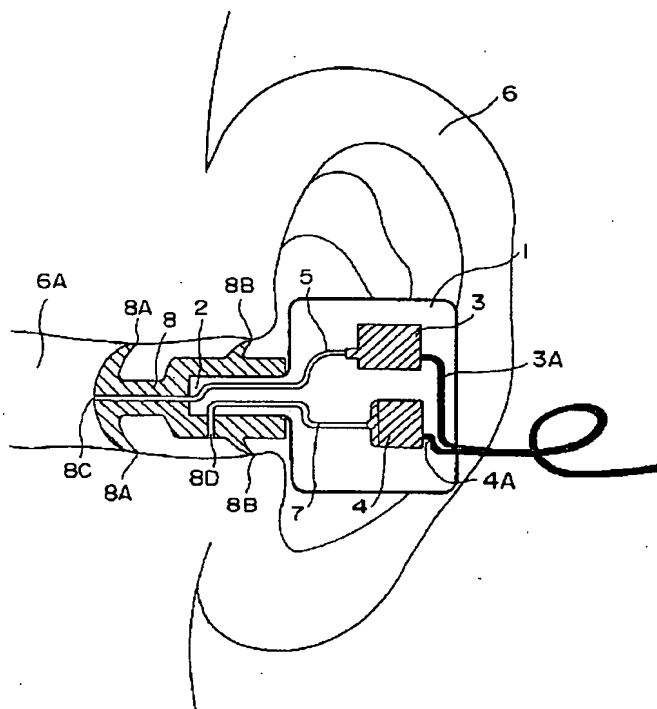
---

DRAWINGS

---

[Drawing 1]





---

[Translation done.]